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(54) Title: IMPROVED HYDRATED EMULSIFIER COMPOSITIONS AND THEIR METHOD OF PREPARATION

(57) Abstract

Unique powdered hydrated emulsifier, or surfactant compositions comprising, by weight, 2-15% water of hydration, emulsifier, at least about 0.1% shortening and/or about 0.1-30% flavoring agent. Virtually all of the common emulsifiers capable of hydrogen bonding are suitable for use in preparing the improved compositions of the present invention. The shortening used can be any of a number of the commonly available vegetable and animal shortenings, including marine oils, and is at least partially hydrogenated. Flavoring agents suitable for the compositions of this invention may be any of the normal natural or synthetic flavor additives commonly utilized in the food industry and suitable for human consumption. The invention further comprises improved methods for preparing the hydrated emulsifier compositions.

#### ANSWER

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<u>negative variables</u>	<u>positive variables</u>
ad. age > 18 years	ad. age < 25 years
ad. gender = female	ad. gender = male
ad. education level = primary	ad. education level = secondary
ad. income < 10000	ad. income > 10000
ad. marital status = married	ad. marital status = single
ad. employment status = employed	ad. employment status = unemployed
ad. gender = female	ad. gender = male
ad. education level = primary	ad. education level = secondary
ad. income < 10000	ad. income > 10000
ad. marital status = married	ad. marital status = single
ad. employment status = employed	ad. employment status = unemployed

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IMPROVED HYDRATED EMULSIFIER COMPOSITIONS AND  
THEIR METHOD OF PREPARATION  
BACKGROUND OF THE INVENTION

5    Field of the Invention

The present invention relates to improved hydrated emulsifier compositions and their method of preparation. In addition to the powdered hydrated emulsifiers disclosed and claimed in my prior application referred to above, this application describes and claims new methods for preparing the powdered hydrated emulsifiers, hydrated emulsifier compositions including shortenings and/or flavoring agents, and methods for preparing the hydrated emulsifier compositions.

Description of the Prior Art

As set forth in my prior application, surface active agents (emulsifier) are commonly utilized in the food, cosmetic and industrial chemical industries for stabilizing and thereby enhancing the physical characteristics of various bakery products, cake icings, shortenings, whipped toppings, cosmetics, paints, and the like. While my prior invention was directed to minimal hydrates of emulsifiers and their method of preparation so as to yield powdered products exhibiting characteristics of functionality approaching those of the fully hydrated emulsifiers which were then commercially available, certain unsolved problems in the emulsifier arts remain. It is with specific regard to a more complete solution of these problems that the present application is directed.

For example, while my prior invention discloses and claims an economical and usable method for preparing powdered hydrated emulsifiers, I have now discovered new, alternative methods for their preparation. In addition, prior art literature as well as actual commercial usage of emulsifiers has recognized the desirability of providing and using stabilized shortenings containing surface active agents therein to produce what might be termed hydrated shortenings.



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In this regard attention is invited to U. S. Letters Patent No. 3,943,259 to Norris. Therein, a fluid shortening is disclosed including an emulsifier in a stabilized dispersion. In similar fashion U. S. Patent No. 3,993,580 to Galusky discloses a process for the continuous production of hydrated lipids in which the final product may have a fat plus emulsifier phase in its most stable crystalline form. Other prior art teachings of shortening-emulsifier compositions which are considered to be of interest include the following U. S. Letters Patent: 3,671,459; 3,782,970; 3,785,993; 3,889,004; 3,958,033; 3,966,632 and 3,995,069. However, none of these prior art teachings disclose or suggest either the preparation or use of powdered shortening-hydrated emulsifier compositions.

Relatively modern developments in the food and cosmetic industries have dealt with addition of flavoring agents to their products. For example, it is now quite common to add a butter flavoring to bread and cake products and to add, for example, fruit flavors to cosmetics such as lipsticks. Such flavoring agents are normally added as a discrete ingredient during the commercial manufacture of the end use product. Particularly with regard to bakery mixes intended for private, in-the-home, use, the addition of flavoring agents has proved to be extremely difficult if not virtually impossible. The difficulties are primarily associated with the normal volatility of the flavoring agents and the fact that they must be packaged separately from the dry mix. In fact, I am not aware of any prior art teaching whereby flavoring agents can be added in a dry, powdered or flaked, form to bakery mixes.

Accordingly, it is clear that there is a great need in the art not only for additional methods for preparing powdered hydrated emulsifiers, but also for improved hydrated emulsifier compositions containing shortenings and/or flavoring agents.



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SUMMARY OF THE INVENTION

The present invention relates to improved hydrated emulsifier compositions of the type suitable for use in the food, cosmetic and industrial chemical industries as well as their methods of preparation. Accordingly, the present invention comprises a method for the formation of what may be termed "minimal hydrates" of emulsifiers or surfactant compositions as well as such compositions also including shortenings and/or flavoring agents. Insofar as the hydrated emulsifiers and their method of preparation, per se, are involved, my presently co-pending application referred to above is referred to and its disclosure is incorporated herein by reference.

Further laboratory testing and experimentation has revealed additional methods for preparing the hydrated emulsifiers in addition to the spray chilling method previously disclosed and claimed. More specifically, it has been determined that flaked and powdered hydrated emulsifiers can be prepared using a roller chiller or a belt chiller process. The procedure is first to melt the chosen emulsifier or mixture of emulsifiers and then to add water to the heated emulsifier. This mixture is then blended until a substantially uniform, gel-like mixture is obtained. This mixture is then applied, as by pouring, to either a roller chiller or a belt chiller. A flaked hydrated emulsifier may then be removed from the chiller.

In order to obtain a powdered final product, the flaked emulsifier is next placed in a freezer for about one hour and then ground in a blender to obtain the powdered product. The free flowing powder resulting from this process comprises the powdered hydrated emulsifier, the composition of which was described and claimed in my prior application. Specific examples relating to this new method of preparation are presented hereinafter.

At this point it should be noted that the application



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of the water-emulsifier mixture to the chiller by pouring is but a preferred method for practicing the invention. Other methods of application to the chiller, such as, for example, spraying may also be utilized. In fact, it is believed that if the water-emulsifier is sprayed onto the chiller a powdered final product may be obtained without the necessity of grinding. Furthermore, it is to be understood that the flaked hydrated emulsifier may be ground into a powder without the necessity of first freezing the flakes.

Yet another aspect of the improved hydrated emulsifier compositions of this invention comprises powdered or flaked water dispersible shortening-hydrated emulsifier blends, and their method of preparation. As previously stated there is a great need for water dispersible shortening blends, and I have now been successful in applying minimal hydrate techniques to prepare shortening blends comprising shortening, emulsifier and water of hydration. The shortening used can be any of a number of the commonly available products such as, for example, soybean oil, corn oil, peanut oil, cotton-seed oil, palm oil, coconut oil, lard, tallow or marine oils. Since the final shortening-hydrated emulsifier blend is to be presented in a flaked or powdered form, the shortening should be at least partially hydrogenated so as to provide a sufficiently hard blend. While as little as about 0.1% shortening may be present in the final shortening-hydrated emulsifier blend, a preferred blend would contain a shortening to hydrated emulsifier ratio of about 7:3. It is, of course, to be understood that the ratio of shortening to hydrated emulsifier will vary dependent upon the lipophilic, hydrophilic characteristics of the chosen emulsifier. Accordingly, analysis of the shortening-hydrated emulsifier blends will reflect about 2-15% by weight water of hydration, at least about 0.1% by weight shortening, and emulsifier.

These shortening-hydrated emulsifier blends may be



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prepared substantially in accord with the method described and claimed in my prior application and the new chiller method described herein. More specific examples concerning the composition of these blends, their method 5 of preparation and their use are presented hereinafter.

Yet another improved hydrated emulsifier composition of these blends, their method of preparation and their use are presented hereinafter.

Yet another improved hydrated emulsifier composition 10 of this invention comprises a flavored, hydrated emulsifier and its method of preparation. Briefly stated, these flavored, hydrated emulsifiers comprise flaked or powdered hydrated emulsifiers containing about 2-15% by weight water of hydration and about 0.1-30% by weight 15 flavoring agent. Flavoring agents may be selected from any of the commercially available materials consisting of both natural and artificial flavors such as, for example, butter, butterscotch, chocolate, peppermint, orange, lemon, and others. While a specific example 20 disclosing a preferred method for preparing the flavored, hydrated emulsifier is presented below, they may be prepared by spray chilling, roller chilling or belt chilling.

Finally, the improved hydrated emulsifier compositions 25 of the present invention further comprise flavored, water dispersible, shortening-hydrated emulsifier blends and their method of preparation. These blends comprise a flaked or powdered hydrated emulsifier composition comprising about 2-15% by weight water of hydration, 30 about 0.1-30% by weight flavoring agent, at least about 0.1% by weight shortening, and emulsifier. Specific examples of these flavored, water dispersible, shortening-hydrated emulsifier blends as well as their method 35 of preparation are presented hereinafter, and they, too, may be prepared by spray chilling, roller chilling or belt chilling.

The invention accordingly comprises several steps



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and the relation of one or more of such steps with respect to each of the others, and the compositions possessing the features, properties and the relation of constituents which are exemplified in the following 5 detailed disclosure, and the scope of the invention will be indicated in the claims.

DETAILED DESCRIPTION

10        The present invention relates to improved hydrated emulsifier compositions and their method of preparation. Such compositions are commonly used in the food, cosmetic and industrial chemical industries. The following examples, then, are set forth in order to fully describe 15 the compositions of the present invention and their methods of preparation.

EXAMPLE I

20        One mole of distilled monoglyceride, made from fully hydrogenated fatty acid glycerol esters, containing 90% alpha monoglyceride, was reacted with 1/2 mole of succinic anhydride. The mixture was heated with stirring until maximum formation of the succinic half ester had occurred. 25 Two moles of water were added. The blend became quite viscous and gel-like. When the mixture was uniformly blended, it was applied to a roller chiller. This produced an off-white flaked material which was then placed in a freezer for one hour. The frozen, flaked material 30 was then ground in a Waring blender.

The hydrated emulsifier product obtained was a free-flowing white powder that passed through a standard twenty mesh screen. This product contained about 7% by weight water.

35        The hydrated emulsifier prepared in accord with this Example I dispersed readily in cold water.

Further examples of the hydrated emulsifier compo-



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sitions were prepared in accord with the roller chilling method of Example I. The resulting powdered hydrated emulsifier compositions thus prepared are presented below. All composition constituents are listed in weight percents.

5

#### EXAMPLE II

Distilled Monoglycerides	85%
Ethoxylated Mono-diglycerides	3%
Water	12%

10

#### EXAMPLE III

Sodium Stearoyl 2 Lactylate	19%
Polyoxyethylene Sorbitan Ester	19%
Mono-diglycerides	57%
Water	5%

15

Powdered hydrated emulsifier compositions were also produced by flaking the material onto a belt chiller and subsequently grinding the flakes into a powder. The following Examples IV and V depict powdered hydrated emulsifier compositions prepared as generally set forth in Example I but utilizing a belt chiller.

20

#### EXAMPLE IV

Distilled Monoglyceride	88%
Ethoxylated Mono-diglycerides	3%
Water	9%

25

#### EXAMPLE V

Succinic half ester of glycerol monoesters	62.5%
Monoglyceride	31.5%
Water	6.0%



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In each of the above examples, the blended material was applied to the chiller by pouring, but the method of this invention is not limited thereby. The material could be sprayed onto the chiller, and this could result 5 in obtaining a powdered product without the necessity of grinding in a blender. It should also be noted that the flaked material may be ground to a powder without first having frozen them.

The following examples are set forth in order to 10 fully describe the method and the composition of improved hydrated emulsifier compositions of this invention comprising powdered, water dispersible shortening-hydrated emulsifier blends.

15

EXAMPLE VI

A blend of twenty parts succinylated monoglyceride, ten parts distilled monoglyceride, forty-six and one half parts cottonseed flakes (Iodine value less than four), and twenty-three and one half parts soybean oil 20 (Iodine value 135) was heated to about 80°C and mixed. Water was added to this blend, and the mixture was sprayed into a cooling chamber where the material went from a temperature of about 80°C to about 20°C. The product obtained was free-flowing light yellow powder containing about 7% by weight water.

The emulsification properties of the shortening-hydrated emulsifier blend was tested by placing forty grams of the product into 120 grams of 22°C. The minimum amount of mixing needed to wet the powder was used. 30 The mixture was then observed with no further mixing. After approximately thirty minutes a noticeable swelling of the particles had occurred. After approximately one hour and thirty minutes the mixture was an emulsified paste.

35 Yet another example of the powdered, water dispersible shortening-hydrated emulsifier blend of the present inven-



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tion was prepared in accord with the spray chilling method of Example VI. The resulting shortening-hydrated emulsifier blend composition is presented below. All composition constituents are listed in weight percents.

5

EXAMPLE VII

Cottonseed Flakes	46.5%
Soybean Oil	23.5%
Mono-diglycerides	15.0%
Propylene glycol monostearate	15.0%

10

These materials were heated to about 80°C and mixed. Water was added and the mixture was spray chilled, resulting in a final product containing about 6% water. The product obtained was a light yellow powder.

EXAMPLE VIII

15	Palm Oil	49.2%
	Cottonseed Flakes	36.3%
	Polyoxyethylene sorbitan monostearate	9.5%
	Water	5.0%

EXAMPLE IX

20	Hydrogenated Soybean Oil	86.5%
	Ethoxylated Mono-diglycerides	7.5%
	Water	6.0%

EXAMPLE X

25	Hydrogenated Cottonseed Oil	79%
	Sodium Stearoyl 2 Lactylate	14%
	Water	7%

The following example is given in order to illustrate a method of utilizing the powdered, water disper-



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sible shortening-hydrated emulsifier blend of this invention.

EXAMPLE XI

Commercial yellow layer cake was prepared using the  
5 shortening-hydrated emulsifier blend of Example VII.  
The cake mix was of the following composition:

	Shortening-hydrated emulsifier blend	25 parts
	Granulated sugar	602 parts
	Cake flour	550 parts
10	Milk powder	50 parts
	Whole egg solids	21 parts
	Egg white solids	9 parts
	Sale	9 parts
	Baking powder	35 parts
15	Water	546 parts

The test cake was of very good overall quality.

The following example is set forth in order to fully describe a preferred composition for a flavored, hydrated emulsifier of this invention and its method of preparation.

EXAMPLE XII

Eighty-five parts monoglyceride was heated to about 75°C, and to this melt were added five parts butter flavor, four parts polyglycerate 60 and six parts water.  
25 When the resulting mixture was uniform it was applied by pouring onto a belt chiller. This produced white flaked material. The flaked material was placed in a freezer for about one hour and was then ground. The final product obtained was a free-flowing white powder that passed through a standard thirty mesh screen.

The flavored, hydrated emulsifier composition wetted



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readily in cold water.

The following examples are set forth in order to fully describe improved hydrated emulsifier compositions of the present invention comprising flavored, water dispersible, shortening-hydrated emulsifier blends and their methods of preparation.

EXAMPLE XIII

A flavored, water dispersible shortening-hydrated emulsifier blend was prepared from the following constituents:

Butterscotch flavor	5 parts
Polyoxyethylene Sorbitan Monostearate	5 parts
Cottonseed Oil (Hydrogenated)	85 parts
Water	5 parts

The butterscotch flavor, emulsifier and water were blended together at ambient temperature. The shortening was melted to about 80°C in a separate vessel. The two liquids were pumped to a single spray nozzle that sprayed into a cooling chamber. The atomized product rapidly decreased in temperature from about 80°C to about 20°C. The product obtained was a free-flowing light yellow powder including about 5% water.

The emulsification properties of this flavored, water dispersible, shortening-hydrated emulsifier blend was tested in accord with the procedures of Example VI. The powder particles swelled after about forty-five minutes and emulsified in two hours.

EXAMPLE XIV

Yet another flavored, water dispersible, shortening-hydrated emulsifier blend was prepared utilizing the following constituents:



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Butter flavor	5 parts
Polyoxyethylene Sorbitan Monostearate	5 parts
Cottonseed Oil (Hydrogenated)	85 parts
Water	5 parts

5 All four constituents were blended together at about 70°C and then applied to a belt chiller. This produced a light yellow flaked material. The flaked material was placed in a freezer for one hour and then ground to a powder. The powdered product obtained was  
10 10 a free-flowing off-white powder that passed through a standard thirty mesh screen. The product contained about 5% water and wetted readily in cold water.

15 Additional examples of flavored, water dispersible, shortening-hydrated emulsifier blends are presented below.

#### EXAMPLE XV

Garlic Oil	.1 parts
Polyglycerate 60	14.9 parts
Cottonseed Oil (hydrogenated)	80 parts
20 Water	5 parts

#### EXAMPLE XVI

Butter flavor	30 parts
Polyglycerate 60	5 parts
Cottonseed Oil (hydrogenated)	58 parts
25 Water	7 parts

While the above examples have been presented with specific relation to products in the food industry, it is to be understood that the method and composition of the invention is not to be limited thereby. Both the  
30 improved hydrated emulsifier compositions and their methods of preparation may be utilized in the production

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of yeast raised baked goods, non-yeast raised baked goods, dairy products, creamers, cake icings, pudding, mayonnaise, cosmetics, paints and the like.

It will thus be seen that the object set forth above,  
5 among those made apparent from the preceding description  
are efficiently attained and since certain changes may  
be made in carrying out the above method and in the compo-  
sitions set forth without departing from the scope of  
the invention, it is intended that all matter contained  
10 in the above description shall be interpreted as illus-  
trative and not in a limiting sense.

It is also to be understood that the following claims  
are intended to cover all of the generic and specific  
features of the invention herein described, and all state-  
15 ments of the scope of the invention which, as a matter of  
language might be said to fall therebetween.

Now that the invention has been described,



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Claims

1. A method for the preparation of hydrated emulsifiers, said method comprising the steps of:
  - a. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, 5 alkoxyLATED condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxyLATED fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters 10 of polyhydric alcohols, and mixtures of said emulsifiers;
  - b. heating said emulsifier until melted;
  - c. adding water into said heated emulsifier;
  - d. blending the water-emulsifier mixture;
  - e. applying the blended mixture to a chiller; and 15
  - f. removing said hydrated emulsifier containing about 2-15% by weight water of hydration from the chiller.
2. A method as in claim 1 further comprising freezing said hydrated emulsifier for about one hour and then grinding said frozen hydrated emulsifier to obtain a powdered 20 hydrated emulsifier containing about 2-15% by weight water of hydration.
3. A method as in claim 1 further comprising grinding said hydrated emulsifier to obtain a powdered hydrated emulsifier containing about 2-15% by weight water of 25 hydration.
4. A method as in claim 1 wherein said step of applying said blended mixture comprises pouring.
5. A method as in claim 1 wherein said step of applying said blended mixture comprises spraying.
- 30 6. A method as in claim 1 wherein said chiller comprises a roller chiller.



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7. A method as in claim 1 wherein said chiller comprises a belt chiller.

8. A method for the preparation of powdered, water dispersible shortening-hydrated emulsifier blends, said 5 method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

10 b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyolated condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof alkoxyolated fatty acid partial esters of polyhydric 15 alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

c. blending said shortening and said emulsifier together;

20 d. heating said blend to about 80°C;

e. adding water into said heated blend; and

25 f. spraying the water-blend mixture through a spray nozzle into a cooling chamber to obtain said powdered, water dispersible shortening-hydrated emulsifier blend containing about 2-15% by weight water of hydration and at least 0.1% by weight shortening.

9. A method as in claim 8 further comprising 30 selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

10. A method for the preparation of flavored, hydrated emulsifiers, said method comprising the steps of:

a. selecting said emulsifier from the group con-



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sisting of fatty acid partial esters of polyhydric alcohols; half esters of succinic acid of a mono-  
acylated polyalcohol, alkoxylated condensates of mono-  
blycerides, stearoyl 2 lactylate and calcium and sodium  
5 salts thereof, alkoxylated fatty acid partial esters  
of polyhydric alcohols, diacetyl tartaric acid esters of  
fatty acid partial esters of polyhydric alcohols, and  
mixtures of said emulsifiers;

b. heating said emulsifier until melted;

10 c. adding a flavoring agent and water into said heated emulsifier;

d. blending the flavor-water-emulsifier mixture;

e. applying the blended mixture to a chiller; and

f. removing said flavored, hydrated emulsifier  
15 containing about 2-15% by weight water of hydration and about 0.1-30% by weight flavoring agent from the chiller.

11. A method as in claim 10 wherein said step of applying said blended mixture comprising spraying through a spray nozzle into a cooling chamber.

20 12. A method as in claim 10 wherein said chiller comprises a roller chiller.

13. A method as in claim 12 wherein said step of applying said blended mixture comprises pouring.

25 14. A method as in claim 13 further comprising freezing said flavored, hydrated emulsifier for about one hour and then grinding said frozen flavored, hydrated emulsifier to obtain a powdered, flavored, hydrated emulsifier.

30 15. A method as in claim 13 further comprising grinding said flavored, hydrated emulsifier to obtain a powdered, flavored, hydrated emulsifier.



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16. A method as in claim 12 wherein said step of applying said blended mixture comprises spraying.

17. A method as in claim 10 wherein said chiller comprises a belt chiller.

5 18. A method as in claim 17 wherein said step of applying said blended mixture comprises pouring.

19. A method as in claim 17 wherein said step of applying said blended mixture comprises spraying.

10 20. A method for the preparation of flavored, water dispersible, shortening-hydrated emulsifier blends, said method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

15 b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

c. blending said emulsifier, a flavoring agent and water together;

25 d. heating said shortening until melted;

e. pumping said heated shortening through a conduit;

f. injecting said emulsifier-flavor-water blend into the stream of said heated shortening; and

30 g. spraying the emulsifier-flavor-water shortening mixture through a spray nozzle into a cooling chamber to obtain said flavored, water dispersible, shortening-hydrated emulsifier blend containing about 2-15% by weight water of hydration, about 0.1-30% by weight flavoring



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5 agent and at least about 0.1% by weight shortening.

21. A method as in claim 20 further comprising selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

10 22. A method for the preparation of flavored, water dispersible, shortening-hydrated emulsifibr blends, said method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyolated condensates, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxyolated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

c. blending said shortening and said emulsifier together with the addition of a flavoring agens and water;

d. heating the emulsifier-flavor-water-shortening mixture;

e. applying the heated mixture to a chiller; and

f. removing said flavored, water dispersible,

30 shortening-hydrated emulsifier containing about 2-15% by weight water of hydration, about 0.1-30% by weight flavoring agent and at least about 0.1% by weight shortening from the chiller.

23. A method as in claim 22 wherein said heating  
35 is sufficient to melt said mixture.

24. A method as in claim 22 wherein said heating is to about 70°C.



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25. A method as in claim 22 further comprising selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

5 26. A method as in claim 22 wherein said chiller comprises a belt chiller.

27. A method as in claim 26 wherein said step of applying said heated mixture comprises pouring.

10 28. A method as in claim 27 further comprising freezing said flavored, water dispersible, shortening-hydrated emulsifier for about one hour and then grinding said frozen material to obtain a powdered, flavored, water dispersible, shortening-hydrated emulsifier.

15 29. A method as in claim 26 wherein said step of applying said heated mixture comprises spraying.

30. A method as in claim 22 wherein said chiller comprises a roller chiller.

20 31. A water dispersible, shortening-hydrated emulsifier blend, said blend comprising: about 2-15% by weight water of hydration; at least about 0.1% by weight shortening selected from the group consisting of at least partially hydrogenated vegetable and animal shortenings; and emulsifier selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;



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32. A water dispersible, shortening-hydrated emulsifier blend as in claim 31 wherein said shortening is selected from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow and marine oil.

33. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 7% water; about 63-70% cottonseed flakes and soybean oil in a ratio of about 2:1, and about 23-30% succinylated monoglyceride and distilled monoglyceride in a ratio of about 2:1.

34. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 6% water; about 63-70% cottonseed flakes and soybean oil in a ratio of about 2:1, and about 23-30% mono-diglycerides and propylene glycol mono stearate in a ratio of about 1:1.

35. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 5% water; about 49.2% palm oil; about 36.3% cottonseed flakes; and about 9.5% polyoxyethylene sorbitan mono-stearate.

36. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 6% water; about 86.5% hydrogenated soybean oil, and about 7.5% ethoxylated monodiglycerides.

37. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 7% water; about 79% cottonseed oil; and about 14% sodium stearoyl 2 lactylate.

38. A flavored, hydrated emulsifier composition,



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said composition comprising: about 2-15% by weight water of hydration; about 0.1-30% by weight flavoring agent; and emulsifier selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half 5 esters of succinic acid of a mono-acylated polyalcohol, alkoxyLATED condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxy-10 lated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

39. A flavored, hydrated emulsifier composition as in claim 38 comprising, by weight, about 6% water; about 5% butter flavor; about 4% polyglycerate; and about 85% monoglyceride.

15 40. A flavored, water dispersible, shortening-hydrated emulsifier blend, said blend comprising: about 2-15% by weight water of hydration; about 0.1-30% by weight flavoring agent; at least 0.1% shortening selected from the group consisting of at least partially hydro-20 genated vegetable and animal shortenings; and emulsifiers selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyLATED condensates of monoglycerides, stearoyl 2 lactylate and calcium 25 and sodium salts thereof, alkoxyLATED fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers.

30 41. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 40 wherein said shortening is selected from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow and marine oil.



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42. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 5% water; about 5% butter flavor, about 85% cottonseed oil; and about 5% polyoxyethylene sorbitan monostearate.

5 43. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 5% water; about .1% garlic oil, about 80% cottonseed oil; and about 14.9% polyglycerate 60.

10 44. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 7% water; about 30% butter flavor; about 58% cottonseed oil; and about 5% polyglycerate 60.



# INTERNATIONAL SEARCH REPORT

International Application No PCT/US80/00793

## I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)<sup>16</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC  
 INT. CL. 3 B01F 17/34; A23D 5/00; A23L 1/22  
 U.S. CL. 426/533,601,607,608,611,653,654; 252/356

## II. FIELDS SEARCHED

Minimum Documentation Searched<sup>14</sup>

Classification System	Classification Symbols
U.S.	426/601,606,608,609, 611, 653,654; 252/356 426/533,607

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched<sup>15</sup>

## III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>14</sup>

Category *	Citation of Document, <sup>16</sup> with indication, where appropriate, of the relevant passages <sup>17</sup>	Relevant to Claim No. <sup>18</sup>
X	US,A, 3,253,928, PUBLISHED 31 MAY 1966, BEDENK ET AL.	1-32,38-42
X	US,A, 3,785,993, PUBLISHED 15 JANUARY 1974, LANGHANS.	1-32,38-42
L	US,A, 3,973,053, PUBLISHED 03 AUGUST 1976, GALUSKY ET AL.	1-32
L	US,A, 3,995,069, PUBLISHED 30 NOVEMBER 1976, HARRIES.	26-32
A	US,A, 3,549,382, PUBLISHED 22 DECEMBER 1970, HANSEN.	1-19,31,32, 40,41
A	US,A, 3,993,580, PUBLISHED 23 NOVEMBER 1976, GALUSKY.	1-44
A	US,A, 3,943,259, PUBLISHED 09 MARCH 1976, NORRIS.	1-44
A	US,A, 3,702,307, PUBLISHED 07 NOVEMBER 1972, NORRIS.	1-44
A	US,A, 3,671,459, PUBLISHED 20 JUNE 1972, NORRIS.	1-44

\* Special categories of cited documents:<sup>16</sup>

"A" document defining the general state of the art

"E" earlier document but published on or after the international filing date

"L" document cited for special reason other than those referred to in the other categories

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but on or after the priority date claimed

"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention

"X" document of particular relevance

## IV. CERTIFICATION

Date of the Actual Completion of the International Search<sup>19</sup> | Date of Mailing of this International Search Report<sup>20</sup>

06 OCTOBER 1980 | 10 OCT 1980

International Searching Authority<sup>1</sup>

ISA/US

Signature of Authorized Officer<sup>20</sup>

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